FOR YOUR INFORMATION

3/9/2015

Articles Related to Vision & Access to the Curriculum

A colleague with contacts in Simi Valley shared the following articles. Many of them relate to assistive technology and apps. Please read on!

Introducing RoboBraille - A Free Resource for Alternate Media, By Lars Ballieu C., December 2, 2014RoboBraille is an automated service capable of converting a range of document formats into MP3, DAISY structured audio books, ebooks (EPUB and Mobi) and digital Braille books. The service can also be used to convert otherwise inaccessible or tricky documents such as image-only PDF-files, JPG pictures and PowerPoint presentations into more accessible formats. RoboBraille is free for personal, non-commercial use. Institutional use is subject to an annual fee and is available through **www.sensusaccess.com.** Additional information can be found at **www.robobraille.org.**

A Simple Accessibility App Can Make the Visual World Audible, By Aaron Souppouris, December 2, 2014

Pharmaceutical giant Novartis has created an app to make visually impaired people's lives a little easier. ViaOptaDaily is available for iOS and Android phones, offering a suite of functions that aim to translate the visual world into audible cues. It's essentially six apps in one: there's a weather element, which reads the current conditions aloud; a tool that uses your phone's camera to determine the color of an object; a money identifier that detects and reads aloud the value of bills, and a simple contacts manager, timer and magnifier. ViaOptaDaily isn't doing anything particularly new -- its functions are available through other free and paid apps -- but what it does do is offer all of the above functions in a simple visual and audible interface, for free. The app can currently speak English, German, Spanish, French, Chinese, Arabic and Japanese, although the fact that it can only detect dollar bills and euro notes limits some of its efficacy internationally.

Note: The tools in this app are applicable to access any information provided within the classroom. To read more about the app, go to http://www.engadget.com/2014/12/02/simple-accessibility-app-makes-the-visual-world-audible/.

Students with Low Vision Using iPads to View Interactive Whiteboards, By Sharon, December 2014

What are the challenges for a student with low vision using an interactive whiteboard?

The student with low vision might try to follow along by pointing a video magnifier at the interactive whiteboard screen, but this is not ideal for many reasons. Now, what if that student with low vision were able to watch the lesson on his/her iPad? What if the student with low vision were able to pinch and zoom in on the interactive whiteboard and take screen shots for reference?

First, all interactive whiteboards require a laptop or desktop computer to work. The computer is what makes the interactive whiteboard work and can be either a Mac or a Windows computer. Sometimes there is a wireless tablet for interacting with the board and sometimes the teacher might use it like a projector however the teacher uses the board, the student with low vison will need accommodations and strategies for access. iPad only join.me is only used for viewing.

Since join.me software paired with the join.me iOS app allows only viewing of the interactive whiteboard it is what I recommend for classroom use. Join.me allows any device to pair such as a laptop, iOS device, and Android devices.

Join.me is free software for your computer and a free app for your iPad. The student does not need to Log in but only needs to enter the code and press the green button. The code will change each time the student connects with the teacher's computer. The screen will then mirror what is seen on the whiteboard. The first thing the student will notice is that the interactive whiteboard screen does not display in full screen on the iPad, however it can be manipulated by the pinch and zoom technique. The student with low vision can now see everything the other students see on the board even if someone is standing in front of the board. The student with low vision can use any accessibility features found on the iPad they usually use, and view the interactive whiteboard.

As the classroom teacher presents the lesson the student with low vision can take screen shots to save important images, such as algebra problems, and can move back and forth between apps to take notes or use any apps.
To read the complete article, go to http://www.pathstoliteracy.org/students-low-vision-using-ipads-view-interactive-whiteboards

A Review of the Be My Eyes Remote Sighted Helper App for Apple iOS, By Bill Holton, 2-19-2015
What if your friends or family members are not available when you need assistance? Mobile identification and text recognition apps such as TapTapSee, Talking Goggles, and the KNFB Reader can take up a lot of the slack, but there are times when you really do need a working pair of eyeballs. Now, thanks to a new iOS app called Be My Eyes, sighted help is just a tap away.

Be My Eyes pairs sighted volunteers with visually impaired individuals who would appreciate a bit of remote assistance. The app is free both to download and to use. When you first open the app you are asked if you need assistance or wish to provide it. In either case you are required to register. For visually impaired users, the app could not be simpler to use. Double tap this button and your device will announce, "Creating connection request." A few seconds later a sort of electronic ring tone begins to play, and soon you are connected to a sighted volunteer through a two-way audio and one-way video connection using the opentok / tokbox video platform.

The volunteer can view your environment through the higher-resolution rear-facing camera. With a connection established, you can converse with the volunteer, introduce yourself (if you like), and ask for help with whatever identification task is at hand. You can disconnect at any time.

With just a few thousand donated Danish Krone, the group hired outside developers to create an iOS app. They released it in the Danish App Store in November of 2014, and beta tested it with just a handful of users. After the user base reached 150 blind users and 400 helpers, the group was awarded a substantial grant from Velux, a Danish window and skylight company. Development continued until January 15, when the Be My Eyes app and service were released worldwide.

As it is now, Be My Eyes is an extremely powerful platform whose time has come. I will still keep both TapTapSee and KNFB Reader on my iPhone home screen, but Be My Eyes will definitely be my fallback—and in many instances, my go-to—resource for those times when greater independence can best be achieved by knowing when and how to ask for help.
To read the complete article, go to http://www.afb.org/afbpress/pub.asp?DocID=aw160202.

iFocus Instructional Videos, By Hadley School
Tips on using the vision accessibility features in iOS. There are 36 videos that walk the user step-by-step with instructional tutorials for finding information.
To access the videos, go to https://www.youtube.com/playlist?list=PLcIupCht58IcZ8m3fS4fScuB8phKEcdSi.

"Seeing" Words a Different Way, and Winning a Spelling Bee, By Newsela Staff, 2-20-2015
The word was “magician” and fourth-grader Richie Tienter spelled it correctly. By doing so, he beat out his final opponent, a fifth-grader. He had just become spelling bee champion at Westridge Elementary School in suburban Ballwin, Missouri. He heard the applause. He felt joy and happiness. He couldn’t see his mother in the crowd, beaming. He missed the looks of delight she and his teachers gave each other as the kids clapped and cheered.

When he was 6 months old, Richie’s parents learned he was blind. His optic nerves, which are at the back of the eyes, are smaller than those of sighted people. He can tell light and shadows, and nothing else. That hasn’t stopped his love of learning, and reading, especially histories of European royalty and World War II. His mom began reading to Richie when he was an infant and she continued to read to him after they found out about his visual impairment, though she started using books with raised bumps for the letters. They were written in Braille.

Now at age 9, his teachers say Richie reads at the level of a student in high school. His vocabulary is well above that of his classmates, too. Richie doesn't dwell on the challenges of his vision impairment. At the spelling bee, he thought of his disability in a different way.
Just before the holiday break, Westridge students took home sheets with spelling words to study. Richie's list was in Braille and he studied during the days off from school, but not every day. He is used to competition. Last summer, he placed third at the National Braille Challenge. Students from first grade through high school compete in up to five areas. There is reading, speed, accuracy, comprehension and spelling. There is also a section for reading charts and graphs in Braille.

Richie will now move on to compete in the written semi-finals of the St. Louis Post-Dispatch Spelling Bee. He will battle other school winners from across the region. The champion of the final bee will represent the St. Louis area in the 2015 Scripps National Spelling Bee. A spokesman for Scripps said the competition periodically has participants who are blind. One was a girl from Oklahoma a few years ago who made it to the third round. Officials from the St. Louis regional spelling bee say they have no record of another recent competitor who was blind. But the contest has done things to assist other children with disabilities in the past.
Winners at Rockwood School District's Westridge Elementary spelling bee typically earn a trophy. Along with that trophy, the school ordered Richie a plaque. It has enough room to mark his win with printed letters — and also in Braille.
To read the complete article, go to https://newsela.com/articles/blind-speller/id/7491/.

Stanford Engineer Produces Free Braille-Writer App, By Andrew Myers, 2-10-2015
Three years ago, Sohan Dharmaraja was a Stanford engineering doctoral candidate in search of his next project when he visited the Stanford Office of Accessible Education, which helps blind and visually challenged students successfully navigate the world of higher education. A brailler is an indispensable tool to blind and visually impaired people, allowing them to type documents and notes, and to send and receive email. Dharmaraja teamed with Adrian Lew, a Stanford associate professor of mechanical engineering, and Adam Duran from New Mexico State University to create the prototype flat-screen brailler. That prototype, created in two months, caught the world's attention, making headlines from *Wired* to the BBC.

Though it has taken Dharmaraja and Lew a couple of years to hone, test and perfect their creation, the full-blown iPad app, known as iBrailler Notes, is now available to the world. The basic version of the app is free. Compared to the remarkable breadth of capabilities of most tablets and smartphones, a brailler is relatively narrow in function, and most cost thousands of dollars. Now, with an iPad and an app, the blind have capabilities many never dreamed possible. Typing is only a third of what people really want to do on a computer, Dharmaraja said. Ideally, the user would be able to not only create documents, but to edit, cut, paste, and move pieces of text around, as well. In a big, multi-page document, that is not an easy thing to do, even for a sighted person.

One of the biggest benefits of iBrailler Notes is how the keyboard works. To locate keys, users simply hold their fingertips anywhere on the glass surface of an iPad – the iBrailler then draws the keys around the fingers. Like a traditional braille writer, iBrailler Notes uses a series of eight keys – one for each fingertip. If the user gets disoriented and loses track of the keys, recalibration is as easy as lifting the hands off the glass and putting them down again. The app will again automatically orient the keys to the fingertips. Other advanced features include a clever undo/redo function that requires a simple clockwise or counterclockwise twist of a single fingertip against the glass. There's one-click Google access. Using the iPad's accessibility tools, iBrailler Notes provides search results by speech for users who would otherwise have no way to read the results. The app also accommodates multiple Braille formats, including mathematics and scientific as well as other languages. Braille systems the world over are notoriously complex – there is no single standard. Every country, every language, every profession has its own way of doing things.
To read the complete article, go to http://news.stanford.edu/news/2015/february/braille-writer-app-021015.html.

Using Your Screen Reader to Extend the Functionality of the Windows Clipboard, By David Goldfield, February 2015
Most computer users are familiar with using ctrl-C to copy selected text to the Windows clipboard for later pasting with ctrl-V. Under normal circumstances, pressing ctrl-C overwrites or erases text which was previously placed in the clipboard. Today, screen readers can take this capability and, to quote a popular chef on television, kick it up a notch. First, let's discuss JAWS from Freedom Scientific. JAWS includes a rather nifty feature known as the Freedom Clipboard, allowing you to append rather than copy text to the clipboard.

Here is how it works. Find some text you want to copy to the clipboard. Select or highlight it the normal way, using the shift key along with appropriate navigation keys, such as shift-insert-right arrow to highlight the next word at the cursor. Press ctrl-C to copy the text to the clipboard, as you usually do. Now, move your cursor to another block of text you want to add to the first block of text. Highlight it. Next, press insert-Windows-C, a key which I admit may take some unnatural finger contortions to press. The selected text will be copied to the clipboard but it will be added to the first block of text you already copied. Now, move to where you want the text to be pasted and press ctrl-V to paste the text. Voila! Those blocks of text are now pasted. As an added tip, you can use insert-Windows-X to have JAWS speak the contents of the clipboard to verify what you copied into it.

As another tip, pressing insert-spacebar followed by the letter C puts the contents of the clipboard into the virtual buffer. In plain English, this means that you can use your standard reading commands to review what you copied into the clipboard. Update: NVDA users can receive similar functionality with the Clip Contents Designer App, available from the NVDA Addon Repository.
To read the complete article, go to https://davidgoldfield.wordpress.com/2015/02/05/using-your-screen-reader-to-extend-the-functionality-of-the-windows-clipboard/.

Braillliant + iDevices = A Winning Combination, By Humanware, February 2015
Connect your iPhone to a HumanWare Braillliant display and take advantage of the sleek design, high quality braille cells, and ergonomic keyboard and thumb keys that have been adored by BrailleNote Apex users. Control your iPhone with the braille input keys, read messages, emails, or iBooks, and type responses or documents in contracted or uncontracted braille, all without the touch screen of the iOS device.

Once the two tools are paired, the Braillliant can be used to produce braille output, along with providing control over the iPhone without using the touch screen. Users have the capability to:

- Navigate applications, home screens, and other elements
- Select items
- Enter text into any editable applications such as text messages, emails, note files, etc, using the Braillliant's ergonomic braille input keys. Text can be entered in contracted or uncontracted braille.
- Read in braille from all accessible applications, including reading books from the iBooks application.

To connect the Braillliant to the iOS device, the pairing has to be initialized from the iPhone or iPad, just as with any other keyboard or Bluetooth device. Braillliant braille displays come in 32, 40, or 80 cell models.
To read more about the Brialliant, go to http://www.nelowvision.com/product/braillliant-bi-80/.

Determining Print Recommendations for Students with Low Vision, Submitted by Liz Eagan on Tue, 2015-02-03 11:59
I recently went to a training on Reading and Low Vision Students. During this session we discussed the need to update the students' needs in regards to print, as well as what the best tool is for doing so.

I developed the form below as a result of a conversation with a student I worked with. She wanted to know what was told to the teachers who would be receiving her in the fall at her new campus. It has been tweaked several times since that first initial design and she's approved each of them. I update the form each year and give it to the student's other teachers. One thing that is not listed on the form is the iPad. If the student uses this tool, then I add that column. I add, delete, or edit columns as needed for the student.

For the reading passages I use the "Basic Reading Inventory" by Jerry Johns. The manual and the "Basic Reading Inventory : Student Word Lists, Passages, and Early Literacy Assessments, 10th Edition" can easily be adapted into different sized fonts. I've also had my braillist transcribe them into braille for reading speeds when doing my Learning Media Assessments.
To read the article and view the forms developed, go to http://www.pathstoliteracy.org/resources/determining-print-recommendations-students-low-vision.

Title: Early Learning Apps - Part 2, By Linda Mamer 1-19-2015

Many apps (applications) are available to promote early learning for young children who are blind or visually impaired, including those who are deafblind or who have multiple disabilities. Part 1, which explains the use of 138 apps including; Cause & Effect, Matching, Sounds, Glow Art, Bubbles, Spelling and Printing, Talking, and Music for Children is available at http://www.pathstoliteracy.org/search/node/early%20learning%20apps%20part%201.

The apps in Part 2 help young children to develop basic cognitive skills, such as cause & effect and matching. They also help to reinforce eye-hand coordination, vocalization, and response to sensory input. These apps have been used specifically with young children especially those with additional needs, or have been chosen because the visual component is very clear and/or the auditory/sound aspects are of high quality and clear. Many of these apps are particularly appropriate for children with CVI (Cortical Visual Impairment). Each category displays the app and explains how to best use the it with students who are visually impaired: Early Drawing Apps, Advanced Drawing Apps, Books for Children Apps, Sequencing Apps, Communication Apps, Math, Timer, and Games.
To view the apps, go to http://www.pathstoliteracy.org/search/node/early%20learning%20apps.

Great Expectations, By National Braille Press January, 2015
Great Expectations brings popular picture books to life using a multi-sensory approach — songs, tactile play, picture descriptions, body movement, engaged listening — all designed to promote active reading experiences for children with visual impairments.

Parents will learn how to describe a picture in a book, how to explore a book's visual concepts, how to play and have fun telling "the whole story." Children will learn to listen carefully to words, feelings (voice), actions, scene, plots, and character development—elements that they would otherwise miss by not seeing the pictures.
To access the books and additional information, go to http://www.nbp.org/ic/nbp/programs/gep/ge_index.html.

Seedlings Braille Books for Children's 2015 Book Angel Program
We would like to invite you to register your child and/or students for two free braille books through Seedlings' 2015 Book Angel Program! If your child/student is visually-impaired, 21 or under, he/she is eligible to receive two free braille books each calendar year.

This is also a great way to introduce braille to V-I toddlers and preschoolers who may become braille readers. Just sign them up for some of our Print-and-Braille books, and they will be able to enjoy reading time with their sighted friends and family members while picking up some important pre-reading The Book Angel Program is open to visually-impaired children, ages 0-21, who live in the US and Canada. Book Angel orders will be filled as time and materials allow. The books will be shipped "Free Matter for the Blind." This program was made possible by Seedlings' generous donors.

To register, fill out our form at http://www.seedlings.org/bkangel13.pdf. You can fax it to: 734-427-8552 or mail it to: Seedlings, PO Box 51924, Livonia, MI 48151-5924. If you have any questions, please email: info@seedlings.org or call 800-777-8552.

Top Ten Ideas in 2014 to Promote Literacy with Children with Visual Impairments, By Charlotte, Staff Writer, December 30, 2014
Included are activities for young braille readers, children who are deafblind, and tips for working with students with visual impairments and multiple disabilities contributed by teachers of students with visual impairments (TVIs), parents, COMS (Certified Orientation and Mobility Specialist), OT (Occupational Therapist), Speech Language Pathologist, and more.

1. Creating Literacy Skills Kits to Target the Expanded Core Curriculum: TVIs Lisa Pruner and Catherine Summ have created a series of kits using children's books, props, reading comprehension questions, and follow-up activities designed to target specific Expanded Core Curriculum (ECC) skills for young children with visual impairments. http://www.pathstoliteracy.org/resources/creating-literacy-skills-kits-target-expanded-core-curriculum.
2. **Write Your Own Braille Book:** TVI Liz Eagan shares an activity for a Kindergarten student using the Building on Patterns series from APH (American Printing House for the Blind).

http://www.pathstoliteracy.org/strategies/write-your-own-braille-book.

3. **Conversation Boxes for Children Who Are Deafblind:** Blogger Liamsmom, the mother of a 5-year-old boy who is deafblind, shares an idea to create a "conversation box" about making toast. http://www.pathstoliteracy.org/resources/conversation-boxes.

4**. Ten Uses of Wikki Stix to Support Curriculum Access**: Gwyn McCormack from UK-based Positive Eye shares creative ideas for using Wikki Stix to make the curriculum more accessible to learners with visual impairments.
http://www.pathstoliteracy.org/strategies/10-uses-wikki-stix-support-curriculum-access

5. **Orientation and Mobility "Routes" Journals:** TVI and COMS Laurie Hudson explores some of the ways in which literacy and O & M support each other. In this post she offers tips on teaching students with visual impairments to create journals to keep track of their routes.
http://www.pathstoliteracy.org/o-and-m-literacy-routes-journals.

6. **Braille Label Crayon Board:** TVI Stacy shares an idea for creating braille labels for crayons.
http://www.pathstoliteracy.org/strategies/braille-label-crayon-board.

7. **Letter "S" Interactive Pre-Braille Book:** Diane Brauner shares ideas and activities for introducing young children to the braille letter "s" in this Circle Time Braille Kit. Includes *The Itsy Bitsy Spider* book and activities for emerging readers, such as recognition of shapes and patterns.
http://www.pathstoliteracy.org/strategies/letter-s-interactive-braille-book.

8. **Question Cards:** Teacher Kristin Quinn shared an activity for helping students with Autism Spectrum Disorder and visual impairments to develop critical thinking skills using question cards.
http://www.pathstoliteracy.org/strategies/question-cards.

9. **Bubble Wrap Painting:** OT Monique Desany shares an activity for students with visual impairments and multiple disabilities to practice handwriting.
http://www.pathstoliteracy.org/strategies/bubble-wrap-painting

10. **The Shape Book:** Special Education teacher Elizabeth Quinn shares a shape book she created to promote braille literacy among young readers.
http://www.pathstoliteracy.org/strategies/shape-book Making Proofreaders' Marks Accessible.

How to use Siri for iPhone and iPad: The Ultimate Guide, By Allyson Kazmucha, Saturday, Jul 12, 2014
Siri is the name of Apple's personal digital assistant. It's basically voice control that talks back to you, that understands relationships and context, and with a personality straight out of Pixar. Ask Siri questions, or ask Siri to do things for you, just like you would ask a real assistant, and Siri will help keep you connected, informed, in the right place, and on time. You can even use Siri's built in dictation feature to enter text almost everywhere by simply using your voice.

While in most cases you can start using Siri right out of the box, in some cases you may have to enable it first. There are also some settings you can configure, including ways to make Siri more secure. Since Siri can, if you choose, bypass your PIN lock and get to your contacts and other data, you should check out all your options and make sure you pick whatever blend of convenience and security makes the most sense to you. You can also change Siri's language, control when Siri listens to you, and even adjust certain settings on your iPhone and iPad, all with the sound of your voice!

Since is meant to be your personal assistant, it only makes sense to have it schedule and manage your meetings and events on your iPhone 5, iPhone 4S, iPod touch 5, iPad 4, iPad 3, or iPad mini. Asking Siri to create a Calendar event only takes a few seconds and is much faster than creating them manually and entering all the data yourself. Whether you need Siri to schedule a meeting, tell you what's on the agenda for the day, or move an existing meeting to another time to make room for a conference call or a power nap, Siri will help make sure your schedule is set.

Note: Many students with disabilities rely on Siri commands to take notes, orient and provide directions, and access tablets for iDevices with voice control. To access the links for dozens of tips on using Siri, go to http://www.imore.com/siri-ultimate-guide.

Braille Institute Releases VisionSim, an Educational Mobile App, By Braille Institute Staff, December 2014
This is the first mobile app by Braille Institute. Its goal is to be used by sighted users who can understand what leading eye diseases look like. By using the camera, users can simulate, in real-time, different degrees of leading eye diseases.

What do you guys think? Would this be helpful for doctors, parents and even those who are starting to experience sight loss?

Have you ever wondered what's it like to go blind? Closing your eyes and seeing darkness for a short period of time is one way to try to understand the challenges of the visually-impaired, but that's not always an accurate comparison. A sizable portion of the visually-impaired community is not trapped in darkness; many suffer from deteriorating diseases that slowly rob them of clarity.

The Braille Institute has released an Android app that tries to give users a better understanding of what it's like to look through the eyes of someone whose sight is fading.VisionSIM, available now for Android 2.2 and higher, simulates four different degenerate eye diseases: cataracts, diabetic retinopathy, glaucoma, and macular degeneration.

VisionSIM can even capture the view from the phone and enable saved images or photo sharing. Users can then click the "Learn More" button to load more information about the symptoms and possible treatments for disease. That is part of VisionSIM's goal to "foster understanding and compassion for the millions of people affected by these eye conditions."

To download the app from the Android Market and visit the Braille Institute for more information about the visually-impaired, go to http://androinica.com/2011/07/braille-institute-vision-sim-app-review/

Enhancements in JAWS 16.0.1722, Freedom Scientific Staff, December 2014
The list of enhancements includes keys used and applies to many software applications. There is also a frequently asked questions section. This information may be very helpful in light of the use of JAWS for state testing.
To access the updated information, go to http://www2.freedomscientific.com/downloads/JAWS/JAWS-whats-new.asp#Enhancements.

New Wireless Victor Reader Talking Book Players Fully Supports DAISY, By Humanware staff, December 2014
Victor Reader offers new wireless Internet connectivity features for both the Victor Reader Stratus and Victor Reader Stream models. National Federation of the Blind NFB Newsline Service can now have their daily newspaper transmitted directly to their Victor Reader Stream. And most recently, in February 2014, the latest version 4.3 software for the Stream introduced a new Internet Radio app as well as access to the well-known Wikipedia and Wiktionary online reference services.

With over 15 years in the global marketplace and over 500,000 players in use, HumanWare continues to innovate with Victor Reader. Today, Victor Reader extends its talking book, document, and music playback features, to the wireless world where downloaded books and newspapers, streaming radio stations, and online Wikipedia reference tools become part of Victor Reader's increasing access to digital content. And best of all, users continue to navigate the new online content through the player's popular and simple to use bookshelf interface.
To read the complete article, go to http://www.humanware.com/microsite/victor/.

Liquid Metals Help the Blind See Tech, By Elijah Wolfson, 12-7-2014
Though the printed word was once state of the art, it's now old technology, just one island in a media-rich world that grows more complex every year. But for the vision-impaired, access to this wealth is limited to what can be translated to sound and touch. Most rely on computer-reading software like Apple's VoiceOver and Google's TalkBack to access the media-rich digital world that those with sight take for granted. Screen readers don't give you the full breadth of information. You might hear a pause, but you won't know if that's a period or comma as an example. Braille gives you that information. Braille is the closest to a visual reading experience that someone who is blind is going to get.

Katie Cagen, an electrical engineer at Microsoft, might have a solution. It's a device she calls Ferrotouch, and it uses electromagnets and fluid metals to create a tactile display that is refreshable and flexible enough to communicate almost any shape—from braille dots to charts and more. Cagen's solution—which she came to earlier this year while still an undergraduate at the Harvard School of Engineering and Applied Sciences—was to take a layer of electromagnets and place them underneath a layer of ferrofluid—a colloidal suspension of iron nanoparticles. When the magnets are

charged, they can cause the ferrofluid to shift around, forming bumps that the user can touch. It's about creating a map, or a chart, or producing something else really complex. It could make doing trigonometry a lot easier.
To read the complete article, go to http://www.newsweek.com/liquid-metals-help-blind-see-tech-289644.